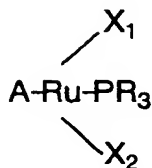


### Abstract

A novel polymer-supported arene-ruthenium complex represented by the following formula:



, wherein A represents an organic polymer with a side chain containing an aromatic ring coordinated to Ru, X<sub>1</sub> and X<sub>2</sub> represent the same or different halogen atoms, and R represents a hydrocarbon group that may have a substituent is provided for use as a catalyst. This novel polymer-supported arene-ruthenium complex and catalyst thereof can be produced by a simple process, are stable and easy to recover, have a high catalytic activity, and can be used for various organic synthesis reactions. Novel methods for an organic synthesis reaction such as ring-opening metathesis reaction of an olefin compound and reduction of a carbonyl group, using the catalyst are provided.